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CLAIMS (AMENDED 11.11.05)

1. An automatic control device (1), comprising

input means (21, 24) for inputting samples comprising measured values (7) of cyclic voltage and/or current with a defined nominal frequency;

5   computing means (21) for computing a parameter on the basis of said samples, and for comparing the computed parameter to a predefined condition;

initiating means (21, 23) for initiating a control function in response to the parameter meeting the predefined condition; c h a r a c t e r i z e d by

10   said input means (21, 24) being arranged to input a predefined number of samples per one cycle of the nominal frequency;

said computing means (21) being arranged to compute the parameter with a discrete Fourier transform algorithm optimized on the basis of fixed coefficients corresponding to said predefined number of samples per cycle of

15   the nominal frequency.

2. An automatic control device as claimed in claim 1, c h a r a c - t e r i z e d in that said predefined number is a power of 2.

3. An automatic control device as claimed in claim 1 or 2, c h a r - a c t e r i z e d in that said predefined number is 32.

20   4. An automatic control device as claimed in claim 1, 2 or 3, c h a r a c t e r i z e d in that in said optimized Fourier transform algorithm calculations involving coefficients fixed to zero have been eliminated.

5. An automatic control device as claimed in any one of claims 1 to 4, c h a r a c t e r i z e d in that in said optimized Fourier transform algorithm

25   multiplication by fixed coefficients 1 or -1 are avoided by use of signs.

6. An automatic control device as claimed in any one of claims 1 to 5, c h a r a c t e r i z e d in that in said optimized Fourier transform algorithm two or more multiplications by a fixed coefficient have been combined into a sum equation.

30   7. An automatic control device as claimed in any one of claims 1 to 6, c h a r a c t e r i z e d in that in said optimized Fourier transform algorithm samples and coefficients are brought to integer form by multiplication by a value that is fourteenth power or higher of two.

8. An automatic control device as claimed in any one of claims 1 to

35   7, c h a r a c t e r i z e d in that said computing means are arranged to com-

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pute a parameter that is one of the following: root-mean-square current, power factor, (sign), distortion, earth fault current.

9. An automatic control device as claimed in any one of claims 1 to 8, c h a r a c t e r i z e d in that the automatic control device is an electric pro-

5 tection device and said control function comprises isolation of a second device (3) from the electric line (2).

10. An automatic control device as claimed in any one of claims 1 to 8, c h a r a c t e r i z e d in that the automatic control device is connected to a generator (40) feeding the electric line (42) and said control function comprises

10 adjustment of the operation of said generator.

11. A method for automatic control of an electrically operated device, comprising

inputting samples comprising measured values of cyclic voltage and/or current with a defined nominal frequency;

15 computing a parameter on the basis of said samples;

comparing the computed parameter against a predefined condition;

initiating a control function in response to the parameter meeting the predefined condition;

c h a r a c t e r i z e d by

20 fixing the number of samples input per one cycle of the defined nominal frequency;

computing the parameter with a discrete Fourier transform algorithm optimized on the basis of fixed coefficients corresponding to said predefined number of samples per cycle of the defined nominal frequency.

25 12. A computer program product, executable in a computer, c h a - r a c t e r i z e d in that execution of the computer program product in the computer causes the computer to carry out the steps of claim 11.

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